

City Manager
102 North Third Street
PO Box 1810
Wilmington, NC 28402-1810

910 341-7810
910 341-5839 fax
wilmingtonnc.gov
Dial 711 TTY/Voice



April 20, 2007

Mr. Alan W. Klimek, P. E.
DENR-DWQ
Point Source Branch
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

Re: SPECIAL ORDER BY CONSENT APPLICATION
Collection System Permit Number WQCS00012
City of Wilmington

Dear Mr. Klimek,

The following information is being provided to support the attached APPLICATION FOR SPECIAL ORDER OF CONSENT.

If you need additional information please feel free to contact me at (910) 341-7810.

Sincerely,

A handwritten signature in black ink, appearing to read "S.B. Cheatham", with a long horizontal stroke extending to the right.

Mr. Sterling B. Cheatham
City Manager

cc: Mary Ann Hinshaw, Interim Public Utilities Director
Greg Thompson, NHCW & SD
Robert Simpson, Town of Wrightsville Beach
Ed Beck, Surface Water Protection Section, DWQ
Bruce Shell, New Hanover County

Enclosures: Northeast Interceptor Preliminary Engineering Report, March 2007

**STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER QUALITY**

APPLICATION FOR A SPECIAL ORDER BY CONSENT (SOC)

I. PERMIT RELATED INFORMATION:

1. Applicant (corporation, individual, or other): **City of Wilmington**
2. Print or Type Owner's or Signing Official's Name and Title: **Sterling B. Cheatham, City Manager**
3. Facility Name (as shown on Permit): **M'Kean Maffit (SSWWTP) and James A. Loughlin (NSWWTP)**
4. Application Date: **April 20, 2007**
5. NPDES Permit No. (if applicable): **NPDES Permit No. NC0023965 (NSWWTP); and NPDES Permit No. NC0023973 (SSWWTP)**
6. Name of the specific wastewater treatment facility (*if different from 1.3. above*):
M'Kean Maffit (SSWWTP) and James A. Loughlin (NSWWTP)

II. PRE-APPLICATION MEETING:

Prior to submitting this completed application form, applicants must meet with the appropriate regional office staff to discuss whether or not an SOC is appropriate for this situation. Please note the date this meeting occurred: **April 18, 2007**

III. ADDITIONAL FLOW OR FLOW REALLOCATION

Additional flow is requested for the NSWWTP. The Division of Water Quality has placed a moratorium on sewer extension permits tributary to the Northeast Interceptor (NEI). Included in the notice of moratorium, is a request to limit additional flow to the NEI. Due to the physical characteristics of the wastewater collection system tributary to the NEI, it would be possible to immediately divert up to 750,000 gpd of flow from the NEI to the NSWWTP. (The permanent diversion of this flow was planned upon completion of the construction of the upgrade and expansion of the NSWWTP.)

The applicant is currently constructing a 16 MGD advanced WWTP expansion and upgrade to its existing 8 MGD secondary treatment NSWWTP. Construction completion and startup are

projected for early 2009. The highest monthly average in the past 12 months was 7.992 MGD. If it becomes necessary to divert flows from the NEI, such diverted flows and additional flows from the NSWWTP service area may cause the NSWWTP to exceed its current capacity before the expansion/upgrade is completed. In an attempt to prevent this possibility, the applicant has contracted for a re-rating study to establish the plant's capabilities, if any, beyond 8 MGD.

The goal of this study is to establish (a) what flow can be processed through either the existing plant process configuration or various combinations of existing and new or expanded systems while still discharging no more than the mass load equivalent of any pollutant concentration limits allowed by the existing WWTP NPDES permit and (b) when this configuration will be available to produce this quality effluent. The results of this report will be available September, 2007. A copy will be provided to the NC Department of Environment and Natural Resources.

If no flow capacity beyond 8 MGD can be identified, the applicant will consider other flow limiting strategies to remain below the current 8 MGD NPDES permit capacity until the 16 MGD plant is operational. If (a) NEI improvements are installed such that its capacity and reliability are improved and (b) SSWWTP capacity remains, it may be possible to divert limited flows from the NSWWTP service area to the SSWWTP service area to avoid the NSWWTP exceeding 8 MGD. Detailed information about scheduled improvements to SSWWTP were provided to NC Department of Environment and Natural Resources on April ??, 2007.

If capacities beyond 8 MGD are identified for either the existing plant or any combinations of existing and new expansion/upgraded systems, the increased flows enabled by these process configurations and their availability will be used to accommodate (a) diversions from the NEI and (b) additional flows from the NSWWTP service area. With respect to the NEI diversion, priority will be given to enable removal of the quantity of flow added to the NEI since the moratorium was imposed. Plant performance will be maintained at levels sufficient to yield effluent concentrations at or below mass load equivalents allowed within the current NPDES permit.

Upgrades planned to expand NSWWTP are approximately 40% completed to date. If additional flow processing capacity can be assured, the applicant will implement a system to monitor the allocation and connection of these flows to the system in order to maintain plant flows at or less than those flows identified within the re-rating study believed to yield effluent concentrations at or below mass load equivalents implied within the current NPDES permit. Compliance with the new flow limits will be ascertained through comparison with the plant metering utilized for NPDES DMR purposes.

The request for additional flow to the NSWWTP is intended to provide flexibility in reducing flows to the NEI and to enhance the ability of the City and County to manage capacity at both the NSWWTP and SSWWTP. In an attempt to reduce and limit flows to the NEI and protect and manage capacity at the NSWWTP until completion of the expansion and upgrade, a Ten Point Plan was approved by the governing bodies of both the City and the County. Table "1" is a summary of the Ten Point Plan with the corresponding impact, both immediate and projected, for the NEI and the NSWWTP.

The City and County recognize that the failure to meet deadlines established in any SOC or the failure to meet other requirements of an SOC will subject the City to the assessment of stipulated civil penalties.

IV. NECESSITY NARRATIVE

The Northeast Interceptor (NEI) was designed by Henry Von Oesen and Associates between 1977 to 1981. Segment 2 of the NEI is permitted by the City of Wilmington and conveys wastewater from Pump Station 35 located at Bradley Creek to Pump Station 34 located near Hewletts Creek where the wastewater is re-pumped and subsequently conveyed to the SSWWTP through a 24" force main. Segment 2 was constructed by T. A. Loving and placed in service in 1983. The life expectancy of the line was 30 to 50 years. During the time period, the City had planned for the orderly replacement of the line in the capital budget. Over the life of the NEI system there have been several failures, rehabilitations, replacements, upgrades and re-routings of the force mains, gravity sewer and pump stations. These repairs are well documented in the attached Preliminary Engineering Report (PER) prepared by Kimley-Horn and Associates.

Effective May 27, 2006 a state imposed moratorium on the issuance of sewer extension permits was imposed in an effort to limit additional flow to the NEI until critical repairs identified by the Kimley-Horn evaluation of the line are completed. The City has already contracted for the critical repairs. In addition the City, New Hanover County and the Town of Wrightsville Beach were requested by DWQ to take all reasonable effective actions to limit additional flow to the NEI. Flows in the NEI have increased since issuance of this moratorium due to several factors including residential and commercial connections to the system not requiring sewer extension permits and previously permitted systems being placed in service. In addition, damage to a portion of the Bradley Creek Outfall infrastructure caused by Tropical Storm Ernesto is suspected. Rehabilitation efforts are underway to repair this suspected damage and repairs are expected to be complete by summer 2007. Gravity flow monitoring of the service area tributary to the NEI has been completed. This flow data is currently being analyzed and we expect the results to be provided by April 30, 2007, by CDM, our engineering consultant retained for this work. If significant Inflow or Infiltration is identified, appropriate corrective measures will immediately be implemented.

In order to limit flow to the NEI system a diversion of flow from the Porters Neck area currently is being pursued. Initially up to 250,000 gallons per day would be redirected from the NEI and the SSWWTP to the Ogden Interceptor which flows to the NSWWTP. This proposed flow diversion combined with additional flow from development would place the NSWWTP Plant at risk for exceeding NPDES permit limits prior to completion of the plant expansion, currently underway.

This diversion is one component of a flow management strategy developed to manage the system until the Defficiency Identification and Repair Program (DIRP) and Interim repairs as described in the Kimley-Horn PER are completed on the NEI. Other components of the strategy include a sewer insert program to be developed in the City and County service areas tributary to the NEI. This program will ultimately be strategically and appropriately expanded system wide.

Residential building permits and pending "public good" projects such as schools, health clinics and publicly owned gathering places, will continue to be issued however commercial building permits in the NEI area that add new flows will be limited to 80 % of the average increase in commercial flows over the past two years, until plant capacity is increased or the NEI improvements are completed. The City and County will stop authorizing applications for state permitted sewer system extensions in the NSWWTP service area until plant capacity is increased. In addition, the water conservation program will be continued and expanded for City customers and will begin for County customers. The City and County have included funding for system-wide gravity flow monitoring expected to identify areas with excessive Inflow and Infiltration in their respective capital improvement programs. Development of a capacity planning, allocation, and management process for the system is currently underway. These measures coupled with the requested flow diversion are expected to adequately comply with the intent of the moratorium.

V. CERTIFICATION

The existing NSWWTP has been operated and maintained in a diligent and competent manner using generally recognized practices and standards of the wastewater profession. Adequate operations and maintenance funding levels have been provided and all staff in responsible positions is state-certified in wastewater treatment. In the past 10 years, there has been near-100% NPDES permit compliance, the only exceptions being 4 flow-related excesses and 4 concentration-related excesses (it should be pointed out that several of these excesses were hurricane-related). This commitment and record clearly demonstrates the effectiveness of both the applicant's facilities and staff.

A City of Wilmington/New Hanover County 2001 Wastewater Master Plan was completed in July of 2001 and encompasses a comprehensive evaluation of the combined wastewater systems for both New Hanover County and the City. Projections of demands through the year 2020 for both the NSWWTP and SSWWTPs were accomplished with recommendations for expansion/upgrade of each facility. An update to this Master Plan was completed in 2005 and a second update to this Master Plan is currently underway and approximately 85% complete. This master plan update is anticipated for completion in July 2008. This document will provide a detailed update to the original 2001 Master Plan. When completed, a copy of this document will be forwarded to your attention.

In December 2006, City Council approved funds to begin NEI improvements including design of a parallel force main from Bradley Creek Lift Station to SSWWTP and design of interim pump station improvements. The interim pump improvements are intended to increase pump station capacity at both the Hewletts Creek and Bradley Creek pump stations until permanent capacity improvements can be implemented. Recommended improvements also include relocation of a 7000 foot portion of the NEI in the swampy Hewlett's Creek area just west of Pine Grove Drive. Preliminary design has already begun and relocation of this segment of line is expected to be complete in 2008.

PREDICTED COMPLIANCE SCHEDULE

Several projects are underway to assess, repair, replace, and upgrade wastewater delivery and treatment systems. We expect that the early commissioning of upgraded processes at the

NSWWTP will assist in making additional capacity possible. The current schedules for the key activities are:

- **Shipyard Blvd. Force Main Replacement** - Completed December 2006
This project replaced approximately 2300 feet of NEI force main along Shipyard Boulevard.
- **Preliminary Engineering Evaluation** – Completed March 2007
This study evaluated the existing NEI system and proposed recommendations to provide a high level of reliability for the NEI system.
- **System wide Assessment** – Completed February 2007
The goal of this assessment is to create a plan of action for long term, ongoing system rehabilitation and maintenance. This plan includes a recommended capital improvements program and Management Operation and Maintenance Evaluation.
- **Deficiency Identification and Repair Program (DIRP) – April 2008**
Major portions of this project include replacing all air release valves on the NEI and rehabilitation of some gravity sewer and approximately 2000 feet of force main along Greenville Loop Road.
- **Interim Improvements – April 2008**
 - Pump Station Improvements - This project includes electrical reliability upgrades at both stations.
 - Odor Corrosion Control Improvements - Modifications to the odor and corrosion control facilities are planned to allow for competitive bidding and chemical feed addition.
 - NEI Rerouting from PS34 – Relocation of approximately 7000 feet of force main out of the wet Hewletts Creek area.
 - Interim Pump Improvements – Pump Stations 34 and 35 are currently passing flows greater than their firm design capacity. These flows will increase in upcoming years while the NEI expansion is being designed and constructed. Temporary improvements are therefore proposed to provide capacity for projected flows through January 2011, while the permanent improvements are being implemented.
- **NEI Expansion - 2009**
Construction of Second force main to NSWWTP.
- **Sewer Improvements**
 - Bradley Creek Outfall Rehabilitation - Third Quarter 2007
 - Bradley Creek Basin I&I Study and Repair - Third Quarter 2007
 - System wide I&I mitigation - Ongoing

- **NSWWTP WWTP Upgrade and Expansion**
 - Commission Tertiary Filters and UV Disinfecting – Fourth Quarter 2007
 - Commission New Aeration Basin – First Quarter 2008
 - Project Completion – First Quarter 2009
- **Flow data collection and analysis by Camp, Dresser and McKee** – (NEI Service Area) April 27, 2007. This investigation included flow data collection to capture infiltration/Inflow coming directly into the gravity sewer system.
- **Update of 2001 Master Plan by McKim and Creed** - June 2007
An update of the 2001 master plan is currently in process and approximately 85% complete.
- **NSWWTP Increased Capacity Assessment** - September 2007
This study includes an evaluation of the potential to re-rate the NSSWWTP prior to completion of the ongoing Upgrade/Expansion Project.

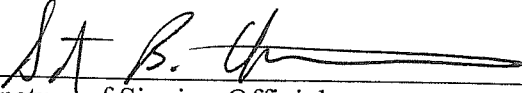
VII. FUNDING SOURCES IDENTIFICATION

The 10 year CIP budgets for both the City and County include estimated cost for this work. The primary funding source comes from the issuance of debt – both revenue bonds and certificates of participation. A rate study has been completed by both the city and county with a 10 year projection of rates that provide coverage for operating costs, capital reserves, and debt service. Both entities are developing budgets for FY 2007-08 that implement the projected rate increases.

In addition both entities have substantial fund balances in their water and sewer enterprise funds to provide resources for pay-as-you-go projects and provide liquidity for commencing debt funded projects prior to the actual issuance. At June 30, 2007 the City's undesignated (available for appropriation) fund balance in the water and sewer fund is estimated to be \$24 million.

APPLICANT'S CERTIFICATION:

I, **STERLING B. CHEATHAM**, attest this application for a Special Order by Consent (SOC) has been reviewed by me and is accurate and complete to the best of my knowledge. I understand if all required parts of this application are not completed and if all required supporting information and attachments are not included, this application package may be returned as incomplete. **Furthermore, I attest by my signature that I fully understand that an upfront penalty, which may satisfy as a full settlement for past violations, may be imposed.** {Note: Reference to upfront penalties in Special Orders by Consent may be found in the North Carolina Administrative Code [T15A NCAC 2H .1206(c)(3)].}

 Date 4-20-07
Signature of Signing Official

Sterling B. Cheatham
Printed Name of Signing Official

THE COMPLETED APPLICATION PACKAGE, INCLUDING THE ORIGINAL AND TWO COPIES OF ALL SUPPORTING INFORMATION AND MATERIALS, SHOULD BE SENT TO THE FOLLOWING ADDRESS:

NORTH CAROLINA DIVISION OF WATER QUALITY
POINT SOURCE BRANCH
1617 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27699-1617

IF THIS APPLICATION IS FOR A NON-DISCHARGE SYSTEM, THEN SEND TO:

NORTH CAROLINA DIVISION OF WATER QUALITY
AQUIFER PROTECTION SECTION
1636 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27699-1636



City Manager's Office
PO Box 1810
Wilmington, NC 28402-1810

910 341-7800
910 341-5839 fax
wilmingtonnc.gov
Dial 711 TTY/Voice



7 25th

TO: _____

Mr. Alan W. Klimek, P.E.
DENR-DWQ
c/o Matt Matthews
512 N. Salisbury St.
Raleigh, NC 27604
FAX: (919) 733-9612

FROM: _____

NONA FITCHETT
Voice: 341-7800

Date: **April 20, 2007**

Number of Pages including cover **9**

Subject: City of Wilmington Special Order by Consent Application

Mr. Klimek, please be advised the original application is being Fed Expressed tonight for earliest business day delivery to the above address. The attached is a copy for your consideration.

Thank You,

Nona Fitchett
Executive Assistant